

CLAIMS

1. A method of transmitting and receiving messages in a multi-point, publish/subscribe computer-based system,

the system having at least one publisher application (10) and at least one subscriber application (20) in communication over at least one communications path (30),

the method comprising the steps of:

a) publishing, using the publisher application (10), a message of a first type over the communications path (30), without knowing the address of an intended recipient subscriber application (20);

b) receiving the message at at least one subscriber application (20);

c) registering, in response to that message, a subscription request, for messages of the first type, for that subscriber application (20) at the publisher application (10),

d) establishing, in response to the subscription request, a certified communications session

i) between the subscriber application (20) and the publisher application (10)

ii) in which the publisher application (10) communicates subsequent messages of the first type to at least the subscriber application (20) and monitors whether the subscriber has received each such message

thereby, establishing a certified message delivery session between the publisher application (10) and the subscriber application (20)

2. The method of claim 1, wherein the message type is identified by the message content and the subscription request is for messages of a that content.

3. The method of claim 2, wherein the subscriber application (20) registers the subscription request.

4. The method of claim 3, wherein the message of the first type is published and later received by the subscriber application (20) using a subject based addressing method.

5. The method of claim 3, wherein the subscription request identifies the subscriber application's "inbox" address.

6. The method of claim 2, wherein the publisher
- (a) monitors the receipt of the message by waiting for an acknowledgement of message receipt from the subscriber and,
 - (b) if the acknowledgement does not arrive within a defined time, resends the unacknowledged message to the subscriber application (20).
7. The method of claim 1 wherein the publisher application (10) is unknown to the subscriber application (20), said method further comprising:
- a) the subscriber application (20) requesting registration from the publisher application (10); and
 - b) the publisher application (10) thereafter accepting the subscriber application (20)'s registration request and registering the subscriber application (20).
8. The method of claim 7, further comprising the publisher application (10) registering the subscriber application (20) by the method comprising:
- a) the publisher application (10) registering the subscriber application (20); and
 - b) the publisher application (10) notifying the subscriber application (20) of registration.
9. The method of claim 6, wherein the publisher application (10) monitors receipt of the message by:
- a) including a sequence number in the message to the subscriber application (20); and
 - b) deleting the message from a ledger of messages only when the subscriber application acknowledges receipt of the message.
10. The method of claim 9, wherein the publisher application (10) sends a message to a plurality of subscriber applications (20) deletes the message from its ledger when all of the subscribers have acknowledged receipt.
11. The method of claim 1, further comprising distributed queuing of messages to one subscriber application (20) out of n-subscriber applications (20), wherein
- (a) the publisher application (10) does not need to know the existence of any of the n-subscribers applications (20);
 - (b) the individual ones of said n-subscriber applications (20) indicate their availability to another one of said n-subscriber applications (20) as a scheduler; and

(c) the scheduler routes messages to subscriber applications having appropriate availability.

12. A system for transmitting and receiving messages in a multi-point, publish/subscribe computer-based system, the system comprising:

(a) at least one publisher application (10) and;

(b) at least one subscriber application (20) in communication over at least one communications path (30),

wherein the system is configured to

i) publish, using the publisher application (10), a message of a first type over the communications path (30), without knowing the address of an intended recipient subscriber application (20);

ii) receive the message at at least one subscriber application (20);

iii) register, in response to that message, a subscription request, for messages of the first type, for that subscriber application (20) at the publisher application (10),

iii) establish, in response to the subscription request, a certified communications session

1) between the subscriber application (20) and the publisher application (10)

2) in which the publisher application (10) communicates subsequent messages of the first type to at least the subscriber application (20) and monitors whether the subscriber has received each such message thereby,

establishing a certified message delivery session between the publisher application (10) and the subscriber application (20).

13. The system of claim 12, wherein the message type is identified by the message content and the subscription request is for messages of a that content.

14. The system of claim 13, wherein the subscriber application (20) registers the subscription request.

15. The system of claim 14, wherein the message of the first type is published and later received by the subscriber application (20) using a subject based addressing method.

16. The system of claim 14, wherein the subscriptions request identifies the subscriber application's "inbox" address.

17. The system of claim 13, wherein the publisher

(a) monitors the receipt of the message by waiting for an acknowledgement of message receipt from the subscriber and,

(b) if the acknowledgement does not arrive within a defined time, resends the unacknowledged message to the subscriber application (20).

18. The system of claim 12, wherein the publisher application (10) is unknown to the subscriber application (20), wherein:

a) the subscriber application (20) requests registration from the publisher application (10); and

b) the publisher application (10) thereafter accepts the subscriber application's (20) registration request and registers the subscriber application (20).

19. The system of claim 18, wherein the publisher application (10) registers the subscriber application (20) by:

a) the publisher application (10) registering the subscriber application (20); and

b) the publisher application (10) notifying the subscriber application (20) of registration.

20. The system of claim 19, wherein the publisher application (10) monitors receipt of the message by:

a) including a sequence number in the message to the subscriber application (20); and

b) deleting the message from a ledger of messages only when the subscriber application acknowledges receipt of the message.

21. The system of claim 20, wherein the publisher application (10) sends a message to a plurality of subscriber applications (20), deletes the message from its ledger when all of the subscribers have acknowledged receipt.

22. The system of claim 12, further configured to perform distributed queuing of messages to one subscriber application (20) out of n-subscriber applications (20), in which

(a) the publisher application (10) does not need to know the existence of any of the n-subscriber applications (20);

- (b) the individual ones of said n-subscriber applications (20) indicate their availability to another one of said n-subscriber applications (20) as a scheduler; and
- (c) the scheduler routes received messages to subscriber applications having appropriate availability.

23. A method of certified delivery of an outgoing message in a multi-point, publish/subscribe computer-based system,

the system having at least one publisher (10) and at least one subscriber (20) in communication over at least one communications path (30), the method comprising the steps of:

- a) establishing a certified delivery session including a certified delivery session name and a certified delivery session ledger;
- b) labeling the outgoing message with a label including the delivery session name and a sequence number;
- c) sending the labeled outgoing message;
- d) receiving the labeled outgoing message at a subscriber.

24. The method of claim 23, wherein the subscriber is a plurality of n-subscribers and individual one of the n-subscribers is selected by one of said n-subscribers as a scheduler to receive the message.

25. The method of claim 24 wherein:

- a) individual ones of said n-subscribers indicate their ability to address messages; and
- b) the scheduler routes messages to subscribers based on the subscriber's indicated ability.